

Year Of Great Activity At The Dominion Experimental Station

The year 1954 was a very busy one at the Experimental Station, not only were a number of important improvements made to the buildings and property, but new projects were undertaken and special emphasis placed on making the results of experimental findings available to the public. The Summary Report for the years 1948-52 is now being distributed and every farmer in the Province will have an opportunity to secure a copy. A bulletin entitled "Crop Variety Recommendations for the Atlantic Provinces" was prepared co-operatively by the five Experimental Stations in the region. This publication has been most helpful in assisting farmers, gardeners and fruit growers to select the best varieties for their particular needs.

New construction and improvements to buildings at the Experimental Station included the construction of a new forage crop drier building, made of cement blocks, and a forage crop drying oven. This oven holds ninety-six trays, each tray capable of holding a five hundred gram sample of green material. These samples may be dried in one or two per cent moisture in from six to seven hours. In this machine the temperature varies from 210 to 220 degrees Fahrenheit. Samples are taken from all forage crop experiments and dried so that a moisture-free yield may be obtained.

Work is now in progress on a header for clover and greenhouse. These two buildings are to be used specifically for breeding work with cereals. The header house is 25 x 50' and the greenhouse is 25 x 70' with six compartments which are individually controlled for temperature. The greenhouse is being constructed by the Lord & Burnham Company, of St. Catharines, Ontario.

The poultry administration building was completely remodelled to include a walk-in cooler and a modern poultry killing plant.

OTHER ACTIVITIES

Another improvement of note was the filling in of three unsightly swamps on the Farm property. Part of the excavation from the new Federal Building was used to rock and level the swamps. In all approximately 12,000 yards of earth fill were used.

To prevent erosion on the large back slope on the Trans-Canada Highway, adjacent to the Upton Farm, and to improve its appearance, the banks were seeded to a clover mixture. The treatment for these slopes was as follows: 100 lbs. of hydrated lime, and 500 lbs. of a 5-10-10 fertilizer per acre. The fertilizer and lime were raked lightly into the soil and the following seed mixture applied at the rate of 50 lbs. per acre: Kentucky Blue Grass—60 per cent, Red Top—25 per cent, Timothy—10 per cent, White Dutch Clover—5 per cent. The seed was lightly raked into the soil.

No changes were made in the senior staff during the year but one officer, namely, J. W. G. Nicholson, was granted leave of absence for the purpose of taking postgraduate studies at Cornell University.

Farmers and others continue to visit the Experimental Station in ever increasing numbers and continue to use the facilities for various purposes. During 1954 a total of approximately 9,000 people visited the Experimental Station. Of these, some 1,000 were technical men, almost 4,000 were farmers, 600 school children, and 4,000 urban visitors. Three thousand, five hundred and forty-six of these people came in sixty-three groups. Among the groups visiting the station were the Provincial Agricultural Conference, Agricultural Institute of Canada, Professional Institute, Egg Graders' Annual Meeting, Acadian Breeders' Association, P.E.I. Sheep Breeders' Association, Guernsey Breeders' Association, Camera Club, and Women's Institutes.

THE SEASON—1954

The weather which prevailed during the month of January was of the so-called "old fashioned type" with low temperatures and heavy snowfalls being recorded. Below zero temperatures were recorded on five days and a new record for monthly precipitation was made when a total of 7.18" of rain and snow were recorded. The lowest temperature for the month was 7 degrees below on January 30th.

The weather in February was more moderate with three days of zero temperature. The mean temperature for the month was 27.9 degrees as compared with 18.1 degrees for the 45-year average.

Precipitation was heavier than normal with more rain being recorded than snow. The temperatures during March were normal. The weather, however, was stormy and more than the normal snowfall was recorded. The lowest temperature for the year was 10 degrees below on March 14th. The summer months were cool and there were no prolonged spells of warm weather. High daily temperatures occurred on only five days when the thermometer reached 80 degrees or higher.

The weather during July and August was showery and there were 35 days when rain was recorded during these two months.

With the exception of the month of September, the fall weather was showery and cool.

The hours of sunshine were below normal during the year. At the end of November 185.9 hours less sunshine were recorded than for the long time average. The greatest deficiency occurred in the months of May, June, July and August, which were 104.6 hours less than normal.

While September was our most favorable fall month, Hurricanes Edna, which roared over the Province on September 23rd and Edith, the most destructive storm to occur here for some years, causing heavy damage to crops and buildings. The season was particularly favorable for hay and pasture crops, average for potatoes, but only fair for corn. Grain suffered heavy damage from lodging and weathering.

AGRONOMY

Soil fertility studies which were established during the past number of years were continued in 1954. These projects study the effect of the following treatments on the yield and quality of crops: commercial fertilizers (formulae and rates); manures and other organic materials; ground limestone, rock phosphates; and various combinations of the above treatments.

During 1954 an area of sloping land was divided into plots where water erosion of soil will be studied. Various cropping practices will be used and tanks will be located at the lower end of the plots to collect surface runoff of soil and water.

Due to the long term nature of the projects under study, results to date are by no means conclusive but they show some interesting trends. Where seaweed has been used as a manure during the past four years, the yield of potatoes, clover hay, and timothy hay have been increased about 75 per cent over the check plots, and barley yields have been increased 25 per cent. Plots which received cow manure at the same rate as seaweed (20 tons per acre) have outyielded the seaweed plots but the difference was not great.

In a study of fertilizer formulae for potatoes, high phosphorus and potash levels gave highly significant yield increases over a three-year period. Nitrogen also increased yields but to a lesser extent.

First year hay yields were the highest where high nitrogen and potash fertilizers were applied, but the sward was predominately grass with about only 25 per cent clover. On the other hand fertilizers high in phosphorus and potash, but low in nitrogen, although lower in yield, gave a sward consisting of about 75 per cent clover.

In 1954 all potato plots at the Beach Grove Farm were planted with small whole tubers (seconds) instead of the usual cut sets, and good yields were obtained. This procedure does much to eliminate "misses" often caused by poor sets, especially when seeding operations are delayed because of wet weather.

Greenhouse tests for the purpose of studying the response of grain and alfalfa to various combinations of nitrogen, phosphorus and potash on different soil types were continued. On the soils used this year, the results show that a high level of nitrogen is required on all soils for the best yields of both grain and straw. The response to phosphorus and potash varied somewhat on each soil but, in general, phosphorus was shown to be slightly more important than potash.

Preliminary observations on the effect of molybdenum on yields of grain, alfalfa and red clover, on the soils used in the greenhouse, did not show any appreciable effect on grain or red clover but some benefit was indicated with alfalfa. These results for the year, however, cannot be considered significant.

A detailed examination of approximately 1,900 acres of land in the Emyvale-Bonwell section of the Hunter River Basin area was made during the summer to study soil erosion. Evidence that sheet erosion and gulching have occurred to a greater or lesser extent on most of the farms in the section was found.

Three hundred and fifty samples were received from farmers for analysis and fertilizer recommendations.

ANIMAL HUSBANDRY

At the end of the year the Ayrshire herd numbered 87 head of cattle, of which four were bulls, 42 breeding females and 33 young stock. In addition to keeping records of production and feed consumption, the herd is used for various types of breeding and feeding experiments. At the time of writing 12 milk cows are being used in an experiment to determine the most desirable rates of feeding hay and grass silage. Results from one year's work indicate that cows will consume more total digestible nutrients, and produce more milk, when hay is fed with grass silage.

All cattle not in experiments, are fed cut potatoes when these are available. An experiment conducted last year indicates that potatoes satisfactorily replace turnips in the ration for dairy cows. It was found that 1 3-4 lbs. of potatoes, when fed pulped and uncooked, will replace 4 lbs. of turnips in the ration, which also included hay and grain. In addition, it was determined that potatoes fed after milking did not adversely affect the flavour or the quality of the milk produced.

For two years in succession a self-feeding horizontal silo, located

other varieties. The variety *Du-Roi* showed up favourably as well, with very rapid return growth after the first cutting. This variety has only been grown here for two years and may be susceptible to winterkilling, although it has shown no signs of it as yet.

It was noted in data from the test of Red Clover varieties that *Dollard*, *Ottawa Red*, and *Lasalle* were closely comparable in yield and slightly better than the commercial seed tested. An excellent stand of *Birdfoot Trefoil* was produced in 1954, from a 1953 planting. This legume is low growing and produces a very good pasture but is usually rather slow to establish. However, two cuttings of grass silage and some peas, turage were obtained from a Red

covered but was relatively low in shelled pea yield.

From the results obtained in 1954, double-seeding would appear to have some possibilities for increasing pea yields but cannot be considered a substitute for chemical weed control, and may adversely affect the following hay crop.

Sinox P. E. may be considered very promising from the standpoint of weed control and shelled pea production.

Arrived too late for pre-emergence treatment.

Fruit Set and Yield Studies with Pickling Cucumbers—Investigations were begun in 1954 to determine the effect of hived bees and certain chemicals on fruit set, colour, and production of closely

planted cucumber vines. Hived bees, *Seedless Set*, *Maleic Hydrasid* (MH-40), *Folium* and *Special Grade Calcium Cyanamid* were used in this experiment. The bees were caged over the cucumber plots with an opening on one side of the cage to permit free entry and exit; the *Calcium Cyanamid*, which was used as a defoliant, was put on a few days before harvest; and the other materials were sprayed on the blossoms and foliage at different intervals during the pre-harvest period. In addition, one series of plots was sown at ten day intervals, three seedings being made beginning June 15 and ending July 5. All

Wisconsin varieties are shorter and more blocky than *Maine No. 2* and are preferred by some processors. However, *Maine No. 2* has proved to be acceptable to Island processors and grades out most profitably for the growers. It is the main pickle variety in this province.

Virus-Free Strawberry Selections—Virus-free stocks of *Premier*, *Sparkie* and *Catskill* were obtained from United States Nurseries in 1954. These proved to be exceptionally vigorous and out-performed our regular stocks of the same varieties by a wide margin. The material received was divided into two lots. One lot was grown under isolated conditions and the plants sprayed weekly for insect control. The other lot was placed in our regular test of variety trials. Some of the isolated material should be ready for distribution in 1955.

ILLUSTRATION STATIONS

Experiments of a fact-finding nature involving 1,094 experimental plots and comprising upwards of 182 acres were under study on seven Illustration Stations in Prince Edward Island and two stations in the Magdalen Islands during the year. These stations are so located that research work may be conducted on all major soil types in the province. Field experiments are so designed that information acquired by supplementary work now conducted by the Branch Experimental Farms and, in turn, benefit the individual farmer.

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The Illustration Station program in the Magdalen Islands to date has consisted mainly in improving and beautifying the home surroundings, establishing farm gardens, introducing new types of farm equipment, introducing improved varieties of blight resistant potatoes and proven high yielding cereal varieties. New varieties of early red clover (*LaSalle*), alfalfa (*Rhizoma*) and timothy (*Climax*) have also been introduced.

A tractor-drawn horse hoe and a regular horse-drawn horse hoe

View of Beach Grove Soil Fertility plots, taken from top of, Open Air Theatre screen.

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Weed Experiments with Canning Peas—This experiment was designed to show the effect of the newer weedicides on the control of weeds and on the yield of peas and hay. Particular emphasis was placed on the stand of grasses as it is now a common practice to seed out the pea crop to fit it into the regular farm rotation.

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plots were single harvested. Part of each seeding was used as bee pasture with the areas caged.

No significant results were obtained from any of the treatments in 1954. The earliest seedings were the most productive, but the use of pollinators did not increase yields and may have depressed them. *Folium* improved fruit color slightly but *Special Grade Calcium Cyanamid*, as a defoliant, was quite injurious to the fruits, especially in the smaller grades. *Maleic Hydrasid* did not appear to retard growth appreciably or affect blossom set.

Pickling Cucumber Varieties — The following varieties of pickling

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CEREAL CROPS

No new cereal variety recommendations will be made for the 1955 season. *Abeget* oats and *Aprita* spring wheat continue to produce higher yields than other named varieties. Several barley varieties on test for the first time were equal to or better than *Charlottetown No. 80* but further testing is necessary before definite conclusions can be drawn.

Septoria or "black stem" of oats was the most prevalent most prevalent cereal crop disease in 1954. It was found in severe proportions in all fields examined and yield losses were particularly high when straw breakage resulted. Intensive studies of foreign varieties during the past two years has provided plant breeders with a few highly resistant varieties for use in breeding programs. The production of varieties suitable for the Maritime area will be one of the main projects of the Cereal Division at the Experimental Station. The construction of a new header house and greenhouse, which will facilitate this type of work, will be completed early in 1955.

Indications are that there is a reduction in barley jointworm damage in the areas of the Province which were first attacked by this insect. It is believed that a gradual build-up of parasitic insects which destroy the jointworm is responsible for this reduction in damage. Selections for yield and desirable type continues in the barley hybrids which have been bred for resistance to barley jointworm.

Each year thousands of tons of valuable fertile soil are lost through erosion on ploughed fields. Fall rye, and to some extent fall wheat, seeded at two bushels per acre, have been used successfully in controlling the greatest portion of this type of erosion on the Experimental Farm. Best results are obtained when the crop is sown during the last week of August or early September. Fall rye is more hardy than is fall wheat and can therefore be used with greater assurance of success, particularly if seeding is in late September. Both crops require very well drained soils.

The Forage Division was occupied with testing of varieties for the most part in 1954. In testing corn silage, *Algonquin* again proved to be the best yielding, although corn yields seemed to be lower in general than in past years. On the basis of two cuts per year *Rhizoma* alfalfa outyielded all

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Illustration Stations are presently located on farms owned and operated by T. Albert Hicken, Allison; James E. Daly and Son, Iona; Hugh J. MacDonald, Monticello; William E. Johnstone and Son, New London; Robert Woodside and Son, O'Leary; J. W. MacKenzie and Son, Rose Valley and Zenon Gallant, Urbanville. Illustration Stations operated under the general administration of the Experimental Station, Charlottetown, are further located at Boisville, Grindstone Island and Portage du Cap, Amherst Island, Magdalen Islands.

The Illustration Station program in the Magdalen Islands to date has consisted mainly in improving and beautifying the home surroundings, establishing farm gardens, introducing new types of farm equipment, introducing improved varieties of blight resistant potatoes and proven high yielding cereal varieties. New varieties of early red clover (*LaSalle*), alfalfa (*Rhizoma*) and timothy (*Climax*) have also been introduced.

A tractor-drawn horse hoe and a regular horse-drawn horse hoe

View of Beach Grove Soil Fertility plots, taken from top of, Open Air Theatre screen.

grazing, and a test of mixtures, using Ayrshire steers.

A new test of pasture mixture which will be clipped to simulate grazing conditions was seeded in 1954.

HORTICULTURE

Weed Experiments with Canning Peas—This experiment was designed to show the effect of the newer weedicides on the control of weeds and on the yield of peas and hay. Particular emphasis was placed on the stand of grasses as it is now a common practice to seed out the pea crop to fit it into the regular farm rotation.

The materials used were *Calcium Cyanamid*, *Alanap I*, *Sinox*

Satisfactory results were obtained using Ayrshire colonies were placed in a one acre field. At three other locations where one colony was placed in one acre and one-half acre areas, results were not conclusive.

CEREAL CROPS

No new cereal variety recommendations will be made for the 1955 season. *Abeget* oats and *Aprita* spring wheat continue to produce higher yields than other named varieties. Several barley varieties on test for the first time were equal to or better than *Charlottetown No. 80* but further testing is necessary before definite conclusions can be drawn.

Septoria or "black stem" of oats was the most prevalent most prevalent cereal crop disease in 1954. It was found in severe proportions in all fields examined and yield losses were particularly high when straw breakage resulted. Intensive studies of foreign varieties during the past two years has provided plant breeders with a few highly resistant varieties for use in breeding programs. The production of varieties suitable for the Maritime area will be one of the main projects of the Cereal Division at the Experimental Station. The construction of a new header house and greenhouse, which will facilitate this type of work, will be completed early in 1955.

Indications are that there is a reduction in barley jointworm damage in the areas of the Province which were first attacked by this insect. It is believed that a gradual build-up of parasitic insects which destroy the jointworm is responsible for this reduction in damage. Selections for yield and desirable type continues in the barley hybrids which have been bred for resistance to barley jointworm.

Each year thousands of tons of valuable fertile soil are lost through erosion on ploughed fields. Fall rye, and to some extent fall wheat, seeded at two bushels per acre, have been used successfully in controlling the greatest portion of this type of erosion on the Experimental Farm. Best results are obtained when the crop is sown during the last week of August or early September. Fall rye is more hardy than is fall wheat and can therefore be used with greater assurance of success, particularly if seeding is in late September. Both crops require very well drained soils.

The Forage Division was occupied with testing of varieties for the most part in 1954. In testing corn silage, *Algonquin* again proved to be the best yielding, although corn yields seemed to be lower in general than in past years. On the basis of two cuts per year *Rhizoma* alfalfa outyielded all

other varieties. The variety *Du-Roi* showed up favourably as well, with very rapid return growth after the first cutting. This variety has only been grown here for two years and may be susceptible to winterkilling, although it has shown no signs of it as yet.

It was noted in data from the test of Red Clover varieties that *Dollard*, *Ottawa Red*, and *Lasalle* were closely comparable in yield and slightly better than the commercial seed tested. An excellent stand of *Birdfoot Trefoil* was produced in 1954, from a 1953 planting. This legume is low growing and produces a very good pasture but is usually rather slow to establish. However, two cuttings of grass silage and some peas, turage were obtained from a Red

covered but was relatively low in shelled pea yield.

From the results obtained in 1954, double-seeding would appear to have some possibilities for increasing pea yields but cannot be considered a substitute for chemical weed control, and may adversely affect the following hay crop.

Sinox P. E. may be considered very promising from the standpoint of weed control and shelled pea production.

Arrived too late for pre-emergence treatment.

Fruit Set and Yield Studies with Pickling Cucumbers—Investigations were begun in 1954 to determine the effect of hived bees and certain chemicals on fruit set, colour, and production of closely

planted cucumber vines. Hived bees, *Seedless Set*, *Maleic Hydrasid* (MH-40), *Folium* and *Special Grade Calcium Cyanamid* were used in this experiment. The bees were caged over the cucumber plots with an opening on one side of the cage to permit free entry and exit; the *Calcium Cyanamid*, which was used as a defoliant, was put on a few days before harvest; and the other materials were sprayed on the blossoms and foliage at different intervals during the pre-harvest period. In addition, one series of plots was sown at ten day intervals, three seedings being made beginning June 15 and ending July 5. All